þÿ P o k e r p l a y e r s w i t h e x p e r i e n c e a n d s k i l l a r e n o t a discrepancy in measures of problem gambling

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Poker Players With Experience and Skill Are Not "Ill": Exposing a Discrepancy in Measures of Problem Gambling[1]

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Abstract Many studies suggest that in poker, amount of money wagered and time spent playing are prominent predictors of problem gambling. These observations are in discord with anecdotal and empirical evidence. Due to the skill component inherent in poker, active players who play for long hours attempting to make a profit—sometimes by wagering large amounts of money—might be labeled as problem gamblers despite having high levels of well-being and financial stability. In three online correlative studies, we assessed the associations between poker experience, problem gambling (as indicated by the South Oaks Gambling Screen [SOGS] and the Problem Gambling Severity Index [PGSI]) and various measures of social and emotional well-being, self-control and emotion regulation. Problem-gambling severity predicts reduced well-being and self-control, increased social anomie, and detrimental emotion regulation. Experienced poker players exhibited high problem-gambling severity, but none of the adverse consequences thereof. Thus, a discrepancy was exposed concerning the validity of SOGS and PGSI. We conclude that these measures may not be valid in assessing problematic/detrimental gambling in poker-playing populations, especially in the case of experienced players, who play for long hours in order to make money. The concepts of problem gambling and poker experience should be disentangled.

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Keywords Poker, Experience, Skill, Problem gambling

Introduction

Diverse aspects of gambling behavior—at both the sociological and individual levels—have been studied scientifically ever since the late 1940s (e.g. Ferentzy and Turner 2013). Since at least the 1970s, the focus of most gambling-related studies has increasingly been on evaluating the underpinnings of problematic (or, in extreme cases, disordered) gambling behavior. It is conventionally thought that continuous gambling behavior can be considered problematic when it results in harmful negative consequences or, more generally, a reduced level of well-being for the individual or those around him or her. In the newest (fifth) edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*), excessive problematic gambling behavior is defined as an addictive disorder due to its high comorbidity with a variety of other addictive disorders, such as substance abuse (e.g. Petry 2010).

The game of poker has been played for over a century (e.g. McManus 2009). However, due to its surge in popularity since the 2000s—with millions of players currently playing poker in numerous gambling venues, most notably online—the game has become the focus of various studies assessing gambling behavior. Most of the studies assessing gambling in poker have also been clinically motivated. That is to say, the primary focus of these studies has been on evaluating problematic gambling behavior within a poker-playing population by employing standardized measures of problem gambling, such as the South Oaks Gambling Screen (SOGS; Lesieur and Blume 1987) or the Problem Gambling Severity Index (PGSI; Ferris and Wynne 2001).

Some poker players undoubtedly are problem gamblers whose well-being is negatively affected by their poker-playing habits. It is thus important to understand what factors influence and prolong detrimental gambling behavior in poker—including those components of the game that are associated with addiction. However, due to its inherent skill component, poker is unlike most games of chance that have been typically examined in studies focusing on problematic aspects of gambling. Different forms of gambling can roughly be categorized as games of either pure chance (such as roulette) or skill and chance (e.g. blackjack, baccarat, and poker; see Bjerg 2010). In poker, it is possible for players to win more than they lose—that is, to be winning players in the long run. This differentiates poker from other games of skill and chance (such as blackjack and baccarat), in which the aspect of skill cannot, under normal circumstances, be applied to the point of becoming a winning player.

Being a winning poker player often requires having played and practiced systematically for long hours to increase one's skill and experience. Evidence suggests that poker experience can be reliably measured, and it is contingent on both the amount of time spent playing and the level of stakes typically played at (which, in turn, corresponds directly to the amount of money typically wagered; see Palomäki et al. 2013a, 2014). Consequently, poker can also be played as a profession, and many poker professionals not only play for multiple hours daily but also often wager substantial sums of money while playing. These characteristics are typically associated with problematic gambling behavior (e.g. Bjerg 2011; McCormack and Griffiths 2012; McCormack et al. 2013).

Studies assessing problem gambling typically apply the same methodology (i.e. SOGS and PGSI) to games of chance and games of skill and chance. The results have suggested that irrespective of the game played, problematic gambling behavior is systematically linked to factors such as time spent gambling, amount of money wagered (e.g. McBride and Derevensky 2009), social withdrawal or anomie (King et al. 2010; Trevorrow and Moore 1998), distorted cognitions (Emond and Marmurek 2010; MacKay and Hodgins 2012), and illusion of control (e.g. Langer 1975). Particularly in online poker, problem gambling has also repeatedly been shown to be linked to impulsivity (Barrault and Varescon 2013b; Hopley et al. 2012; Hopley and Nicki 2010), negative emotionality (Hopley et al. 2012; Smith et al. 2012), and, more generally, negative mood states such as anxiety and depression (Barrault and Varescon 2013a; Wood et al. 2007). Furthermore, Kairouz et al. (2012) found that playing online poker was positively associated with problem gambling, overspending and debt, problems with university studies and interpersonal relationships, and illicit drug use. Finally, Shead et al. (2008) reported that playing poker, compared to other forms of gambling, involves a higher risk of alcohol abuse. Together, the aforementioned results arguably create the impression that playing poker excessively is a risky endeavor through which a multitude of detrimental consequences can easily ensue.

It can be argued that some question items in the standardized problem-gambling measures—especially those aimed at assessing chasing behavior and typical wager sizes—are ill defined when answered by active and experienced poker players. When faced with the PGSI question "When you gambled, did you go back another day to try to win back the money you lost?" it would be entirely reasonable for professional or semiprofessional players to answer positively: For such players, the question might effectively translate into "Even if you had a bad day at work, would you go back to work the next day?" Similarly, the PGSI question "Still thinking about the last 12 months, have you needed to gamble with larger amounts of money to get the same feeling of excitement?" might be difficult to interpret for an experienced or semiexperienced player who wants to gain more experience and skill by "climbing up the stakes," and thus has to wager progressively larger amounts of money. This is analogous to a practicing archer being asked why she or he has moved the target farther away from her- or himself, thereby increasing the difficulty and challenge of the task. Consequently, active poker players who play for long hours attempting to make a profit and increase their skill—sometimes by wagering large amounts of money ("investing" in their training)—might be mislabeled as problem gamblers despite having high levels of well-being and financial stability.

Thus, it is possible that experienced poker players would obtain high scores on the aforementioned standardized measures of problem gambling. However, as far as we know, there is no evidence to suggest that experienced poker players have lower levels of well-being than inexperienced ones. In fact, a strong corpus of anecdotal evidence suggests the contrary: Many players have reported that playing poker and thereby accumulating experience has resulted in a more mature disposition toward encountering bad luck (which is viewed as merely variance) or monetary losses in general (which are impassively viewed as inevitable; Palomäki et al. 2013b). Some players have even suggested that poker has in itself functioned as a learning ground for emotional maturity in dealing with adversities—both in poker and in life in general (see Angelo 2007; Tendler 2011, 2013; see also Palomäki et al. 2013b). The anecdotal evidence resonates also with recent empirical evidence suggesting that poker experience is negatively associated (although the direction of causality is not

clear) with self-rumination (detrimental emotion regulation; Palomäki et al. 2013a) and sensitivity to losses (tendency to experience negative emotions as a result of monetary poker losses; Palomäki et al. 2014). In other words, poker experience is positively linked to a more relaxed ability to "shrug off" monetary losses, which are interpreted as being an inherent part of the game. It is conceivable that for experienced players, the concept of bad luck is often superseded by a profound understanding of the concept of variance (Bjerg 2010; Palomäki et al. 2013a).

In a similar vein, an emerging line of research has also raised issues concerning poker playing—a unique form of gambling—and the concept of problem gambling therein. For example, Weinstock et al. (2013) evaluated differences between professional and pathological gamblers and discovered that whereas both gambled in comparable frequencies and intensities, only pathological gamblers displayed poor psychosocial functioning, low self-efficacy, and impulsivity. Qualitative interviews of professional poker players suggested that they treat playing as work and, as compared with nonprofessional players, are less likely to take unnecessary risks and chase losses (McCormack and Griffiths 2012). Moreover, McCormack et al. (2013) found that regular poker players were less likely to be problem gamblers as compared with non-poker-playing gamblers (i.e. players who played roulette and slot machines or participated in sports betting).

The Aim of the Present Studies

These recent findings suggest that poker is a unique form of gambling for which the concept of problem gambling might not be unambiguously defined. Despite these findings, there is a lack of research directly evaluating the validity of standardized problem-gambling measures in assessing a poker-playing population. Poker players vary substantially in their level of poker experience. Drawing conclusions from data where variability in the level of poker experience was not assessed might render said conclusions suspect—especially if inferences concerning problematic (or disordered) gambling behavior are made with regard to experienced poker players.

The aim of the present studies is to assess the associations between poker experience, problem gambling, and a variety of factors linked to well-being, emotion regulation, self-control, empathizing capabilities, and social anomie. In particular, the present studies aim to shed light on the putative discrepancies between the concepts of poker experience and problematic gambling behavior.

Study 1

The aim of Study 1 was to attain an initial overview of the associations between problem gambling, poker experience, and well-being from the perspective of general satisfaction with life and emotion regulation abilities. We hypothesized that problematic gambling behavior would be negatively correlated with well-being and positively correlated with detrimental emotion regulation. In addition, we hypothesized that problem gambling would be positively correlated with poker experience and that poker experience would not be negatively correlated with either well-being or detrimental emotion regulation. All levels of

poker playing experience were represented in our sample (see "Poker Experience Scale (PES)" later).

Method

Four hundred seventy-eight ($n = 478$) participants (36 female) filled out an Internet survey in English. Of the respondents, 255 had some level of college education and 82 had obtained a master's degree or higher education. The average age of the respondents was 29.9 years ($SD = 9.35$, range = 17–77). Participants were recruited primarily through invitations posted on online forums. They were offered the possibility of taking part in a draw of four separate $50 gift coupons to Amazon.com. The data were collected prior to inviting participants to engage an experimental paradigm (completed online) assessing poker decision-making accuracy, the results of which have been previously published (see Laakasuo et al., 2014).

Materials

Poker Experience Scale (PES)

This scale was introduced by Palomäki et al. (2013b) and shown to predict mathematical accuracy in poker decision making, thereby being a realistic measure of players' level of poker-related skill and knowledge. The scale consists of three 10-point Likert items: "How many years have you played poker?" (1 = "Less than 1"; 10 = "More than 15"); "At what level of stakes do you usually play?" (1 = "Freerolls, NL2-5, PLO2-5, SNG1-5, MTT1-5"; 10 = "Above NL600, PLO600, SNG500, MTT500"); and "What is the rough estimate of how many poker hands you have played during your life?" (1 = "0–50,000"; 10 = "More than 5 million"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .69$). Higher scores indicate higher poker experience. The complete coding and related abbreviations are presented in Palomäki et al. (2013b). The present sample had all levels of poker-playing experience represented (range = 1–9.67, M = 4.98, $SD = 1.98$).

Sensitivity to Losses Scale (SL)

This scale was introduced by Palomäki et al. (2014) and consists of 11 items. It measures the extent to which players experience negative emotions (feelings of unfairness, anger, and frustration) elicited by poker losses, and has been shown to effectively predict the reported severity of tilting behavior. In essence, tilting in poker refers to losing control due to negative emotions and the resulting detrimental level of decision making. Sample items are "I feel losing is unfair" and "Losing is part of the game" (reverse coded). All the items are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .81$). Higher scores indicate a higher tendency to experience negative emotions such as unfairness, anger, and frustration elicited by losses. In other words, higher scores indicate a higher sensitivity to losses. The complete scale is reproduced by Palomäki et al. (2014). We included this scale to better assess the validity of our previous findings (Palomäki et al. 2014) and also to evaluate whether sensitivity to losses shows comorbidity with problem gambling in general.

Hope Scale

This scale was developed by Snyder et al. (1991; see also Snyder 1994, 2002) and consists of 12 items, of which 4 are so-called filler items. According to Snyder, hope is defined as "the perceived capability to derive pathways to desired goals, and motivate oneself via agency thinking to use those pathways (Snyder et al. 2002)." The scale has two subfactors: agency and pathway. Sample items are "I energetically pursue my goals" and "I can think of many ways to get the things in life that are important to me." All items are anchored from 1 ("Definitely false") to 8 ("Definitely true"). The scale had good interitem reliability (Cronbach's $\alpha = .85$). Higher scores indicate a higher tendency for goal-oriented behavior via feelings of agency. We did not analyze the subfactors separately.

Satisfaction in Life Scale

This scale was developed by Diener et al. (1985) and consists of five items. The scale is demonstrably a robust measure of personal satisfaction in life on a very general level. For example, higher scores on the scale typically indicate higher general emotional stability, including a reduced likelihood of depression (for a review, see Pavot and Diener 1993). Sample items are "I am satisfied with life" and "In most ways my life is close to my ideal." All items are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). The scale had good interitem reliability (Cronbach's $\alpha = .84$). Higher scores indicate higher satisfaction in one's life. Both the Satisfaction in Life and hope scales were included because they are psychometrically valid and well-documented measures of general mental stability. These scales can therefore identify potential mental health problems within the evaluated population, and they also help to more accurately assess the construct validity of other scales included in the study.

Reading the Mind in the Eyes Task (RMET)

This task was developed by Baron-Cohen et al. (2001) and is usually employed as a measure of individual theory-of-mind (TOM) capacity. TOM capacity predicts empathetic behavior and the general ability to take another person's perspective. The task consists of 36 close-up pictures of people's eyes portraying an emotion. Participants are given four options of emotion words to choose from, only one of which is the one that corresponds to the emotional tone of the eyes. Higher scores indicate higher empathizing ability (i.e. higher scores provide a performance measure of emotional intelligence). This measure was included to enable valid comparability of our reported Studies 1 and 3 (Study 3 is presented later). Measuring actual performance in emotional intelligence rather than using a self-report measure covers a wider range of psychologically interesting phenomena.

Problem Gambling Severity Index (PGSI)

This scale was developed by Ferris and Wynne (2001). The PGSI—alongside the SOGS—is among the most well-documented and validated measures of problematic gambling behavior (see Orford et al. 2010). The scale consists of nine items. Sample items are "In the past 12 months, how often have you needed to gamble with larger amounts of money to get the same excitement?" and "In the past 12 months, how often have you felt guilty about the

Table 1 Correlation matrix for Study 1

Variables	1	2	3	4	5	6	7	8	9
1. PGSI	1	.20***	−.15***	−.15***	−.22***	.24***	−.02$^{n.s.}$	.15***	−.1*
2. Poker experience		1	−.02$^{n.s.}$	.06$^{n.s.}$	−.03$^{n.s.}$	−.19***	−.02$^{n.s.}$	−.11*	.03$^{n.s.}$
3. Satisfaction in life			1	.55***	.12**	−.08*	.0$^{n.s.}$	−.33***	.14**
4. Hope				1	.10*	−.11*	.29***	−.20***	.14**
5. RMET					1	−.01$^{n.s.}$	.15**	.0$^{n.s.}$	.11*
6. Sensitivity to losses						1	−.03$^{n.s.}$	.27***	.0$^{n.s.}$
7. Self-reflection							1	.30***	.02$^{n.s.}$
8. Self-rumination								1	−.08[a]
9. Level of education									1

n.s. = not significant; [a] $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$. PGSI = Problem Gambling Severity Index; RMET = Reading the Mind in the Eyes Task

way you gamble or what happens when you gamble?" All items are anchored from 1 ("Never") to 4 ("Almost always"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .85$). Higher scores indicate higher levels of problematic gambling behavior. We scored the scale by averaging the items (range = 1–4, M = 1.4, $SD = 0.45$).

Self-rumination and Self-reflection Scales

These scales are facets of the private self-consciousness scale developed by Fenigstein et al. (1975); they consist of 10 rumination and 12 reflection items. Self-rumination and reflection are individual types and tendencies of introspection and contemplation on subjective feelings and thoughts. Self-rumination refers to the tendency to ruminate (dwell) on past negative experiences. The self-rumination scale thus measures the inability to withdraw from constantly thinking about the negative consequences of past decisions. Self-reflection, in turn, is a contrasting type of introspection that arises from a positive curiosity concerning one's emotions and thoughts. Essentially, self-reflection refers to beneficial and thoughtful self-contemplation that is associated with mature coping mechanisms (Elliott and Coker 2008; Trapnell and Campbell 1999).

Sample items for the self-rumination scale are "I often reflect on unfavorable outcomes in my life" and "It is easy for me to put unwanted thoughts out of mind" (reverse coded). Sample items for the self-reflection scale are "Knowing myself is very important to me" and "Contemplating myself is something I don't do very often" (reverse coded). All items in both scales are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). Both scales had satisfactory interitem reliability (Cronbach's $\alpha = .90$ and .88 for self-rumination and self-reflection, respectively). Higher scores on the self-rumination scale indicate a higher tendency to dwell on past negative events, that is, to ruminate. Higher scores on the self-reflection scale indicate an ability for philosophical and detached analysis of one's situation, decision, and emotions.

These scales were included to further confirm the construct validity of SL and bolster the benchmarking of the study in its assessment of the link between PES and PGSI. Including these measures also ties this study to previous findings (Palomäki et al. 2013a) reporting that PES, self-reflection, and self-rumination interact in predicting mathematically correct decisions in poker.

Results

A bivariate correlation matrix was calculated between all the variables (Table 1). PGSI was negatively correlated with the measures of well-being—Satisfaction in Life Scale: $r(478) = -0.15$, $p < .01$; hope scale: $r(478) = -0.15$, $p < .01$—level of education, $r(478) = -0.1$, $p < .05$; and empathizing abilities—RMET: $r(478) = -0.22$, $p < .001$. It was positively correlated with self-rumination, $r(478) = 0.15$, $p < .01$, and sensitivity to losses, $r(478) = 0.24$, $p < .001$. PGSI was also significantly positively correlated with PES $r(478) = 0.2$, $p < .001$, suggesting that experience in poker players is likely to be expressed as symptomatic problematic gambling behavior. However, there were no significant correlations between PES and the measures of well-being—Satisfaction in Life Scale: $r(478) = -0.02$, $p =$ n.s.; hope scale: $r(478) = 0.06$, $p =$ n.s.—or between PES and empathizing abilities—RMET: $r(478) = -0.3$, $p =$ n.s.—whereas there were significant negative correlations between PES and self-rumination, $r(478) = -0.11$, $p < .05$, and between PES and sensitivity to losses, $r(478) = -0.19$, $p < .001$.

Discussion

The results of Study 1 suggest that acquiring poker experience increases the risk of problematic gambling behavior. However, poker experience was not associated with any adverse consequences related to well-being, emotion regulation, or empathizing abilities. That is to say, despite a positive correlation between poker experience and problem-gambling severity, we observed no negative correlations between well-being, proficient emotion regulation, or empathizing abilities and level of poker experience. In fact, the associations between poker experience, self-rumination, and sensitivity to losses—which have been previously demonstrated by Palomäki et al. (2013a, 2014)—suggest the contrary: Increased experience in poker was associated with more proficient emotion regulation abilities. These results allude to a discrepancy in the validity of PGSI in assessing a poker-playing population.

Study 2

For many experienced poker players, especially professional players, the main incentive for playing poker strongly involves the prospect of making money (e.g. McCormack and Griffiths 2012). In poker, any amount of money a player wins, another player inevitably loses (poker is a zero-sum game). There thus exists a seemingly "cold" rationale behind the mechanics of the game, insofar as players who strive to make a profit must always do so at the financial expense of their fellow players. This evokes the question of whether active and experienced poker players—despite not showing lower levels of well-being per se—differ from less experienced ones in their tendency to act in a prosocial (or altruistic) manner by taking into consideration the well-being of others. Disordered gambling has previously been linked to antisocial personality disorder, which in turn is associated with a diminished interest in the well-being of others (as are other personality disorders; see Petry 2006). Therefore, in Study 2 we aimed at assessing whether experience in poker is associated with lower levels of prosocial behavior and with cold incentives for competition or individualistic goals as measured by players' social value orientations (see Van Lange et al. 1997).

Method

Participants, Design, and Procedure

Four hundred seventeen ($n = 417$) participants (31 female) filled out an Internet survey in Finnish. Of the respondents, 43.1% ($n = 180$) had no university or college-level education, and 14.6% ($n = 61$) had obtained a master's degree. The average age of the respondents was 27.9 years ($SD = 7.45$, range = 16–61). Participants were recruited primarily through invitations posted on the online forums of various Finnish poker communities. The data were collected in conjunction with other data that have been previously published (see Palomäki et al. 2014).

Materials

Poker Experience Scale (PES)

For the scale description, see the "Materials" section of Study 1. In the current sample, PES had satisfactory interitem reliability (Cronbach's $\alpha = .74$).

Social Value Orientation (SVO) Scale

This scale was derived from the theoretical background of classical game theory and is utilized as a method for profiling people—based on their social value orientation "drives"—into three categories (Messick and McClintock 1968; Van Lange et al. 1997): prosocial, individualistic, and competitive drives. According to the theory, the values people adhere to have a profound effect on the strategies they utilize in various games where monetary rewards are distributed among players. The use of SVO has been well-documented and validated (see Van Lange et al. 1997).

Social value orientation relates to choices people make in so called decomposed game matrices that are logically deduced from 2×2 prisoner's-dilemma-type game matrices. The SVO scale consists of nine such matrix items. A sample game matrix item is as follows: "Please choose the option you prefer, for any reason, from the following ones: A) You get 480 points and the other gets 80, B) You get 540 points and the other gets 280, C) You both get 480 points." In this example, the choices correspond to the following social value orientation drives: A = competitive—maximum relative difference between the self and the other; B = individualistic—maximum absolute gain for the self; and C = prosocial—equal and maximized joint gain between the self and the other. The items were coded as continuous measures by calculating the difference in allocated resources between the self and the other. This resulted in a bipolar scale that differentiates between prosocial (i.e. nonselfish) and proself (i.e. selfish) behavior.

Modified South Oaks Gambling Screen (SOGS)

We employed a modified version of SOGS by converting the dichotomous questions that are typically scored (i.e. Questions 4–11 and 13–16; see Lesieur and Blume 1987) into 7-point Likert items and omitting the questions that are not scored. The standard version of PGSI also employs a Likert scale, albeit on a scale from 1 to 4. However, 7-step Likert

Table 2 Correlation matrix for Study 2

Variables	1	2	3
1. Poker experience	1	.29***	.03[n.s.]
2. SOGS		1	.08[a]
3. SVO			1

n.s. = not significant; [a] $p < .1$; *** $p < .001$. SOGS = South Oaks Gambling Screen; SVO = Social Value Orientation Scale

scales, as compared with 4-step ones, result in higher resolution in statistical analyses and are consequently more frequently used in psychological literature.

The purpose of the modification was to encourage transparency between SOGS and the questionnaire instruments typically employed in the fields of social and personality psychology. In these fields of science, there is an increasing tendency to move away from employing discrete categorical diagnostics. Currently, theories of personality conform with accumulating data suggesting that personality disorders should be viewed merely as particular types of personality trait constellations—rare ones, but nonetheless within the boundaries of normal human variation in personality traits (e.g. Matthews and Deary 1998). The same can arguably be said of categorical diagnostics related to screening pathological gambling: It is only a matter of administrative convention to define someone as exhibiting problem (or disordered) gambling behavior based on whether the person's score on SOGS is above a specific cutoff point. Furthermore, Likert scoring on a scale from 1 to 7 per item—as opposed to the conventional method of calculating a score based on dichotomous yes-or-no questions—results in higher resolution (i.e. higher variance) in statistical analyses in assessing correlations between SOGS and other variables. The modified SOGS currently employed consists of 13 items. All the items were anchored from 1 ("Never") to 7 ("Very often"). The scale had good interitem reliability (Cronbach's $\alpha = .84$). Higher scores indicate higher levels of problematic gambling behavior (range = 1–6.92, M = 2.22, $SD = 0.93$).

Results

A bivariate correlation matrix was calculated between all the variables (Table 2). There was no correlation between the continuous SVO scale and PES, $r(417) = 0.03$, $p =$ n.s. SOGS and SVO were weakly positively correlated, $r(417) = 0.08$, $p < .1$. SOGS and PES were significantly positively correlated, $r(417) = 0.29$, $p < .001$. These results appear to indicate that experience in poker is associated with behavior that is classified by SOGS as problematic and that poker experience is not associated with a tendency to act selfishly.

Discussion

The results of Study 2 show that, in line with the results of Study 1, poker experience was positively associated with problematic gambling behavior. The weak (albeit nonsignificant) positive correlation between SVO and SOGS might suggest that problematic gambling behavior is linked to a general tendency toward selfish behavior. However, the results also show that experience in poker is not associated with selfish or individualistic behaviors

(based on SVO drives), despite poker experience being associated with playing for long hours and aiming at making a profit (at the cost of fellow players).

Study 3

Experienced poker players frequently play for long hours on a daily basis. Even marathon sessions lasting over a day are not uncommon among some professional or semiprofessional players. Many active poker players play poker primarily online at home on a computer (see O'Leary and Carroll 2012). It is thus conceivable that the aforementioned prolonged periods of poker playing result in some degree of social isolation, which in turn might predispose players to reduced levels of social well-being and increased anomie. This assumption is seemingly supported by the twofold associations linking poker experience to problem gambling (Studies 1 and 2), and problem gambling both to the amount of time spent gambling and to severe social consequences—such as losing a job, a personal relationship, or a career opportunity (e.g. Bergh and Kühlhorn 1994). Therefore, in Study 3 we aimed at assessing the associations between poker experience and social well-being.

Method

Participants and Design

Three hundred fifty-four ($n = 354$) participants (23 female) filled out an Internet survey in Finnish. Of the respondents, 35.3% ($n = 125$) had some level of university education. The average age of the respondents was 28.4 years ($SD = 7.7$, range = 17–62). Participants were recruited through social media and invitations sent to student associations' mailing lists in multiple Finnish universities. In addition, several online poker communities were contacted, and invitations were posted on their web forums.

Procedure and Materials

The currently reported data were collected in conjunction with data that have been previously published and are unrelated to current aims: In addition to the measures reported here, the participants filled in the self-rumination and self-reflection scales (Elliott and Coker 2008) and responded to two measures simulating online poker decision making (for the results, see Palomäki et al. 2013a).

Poker Experience Scale (PES)

For the scale description, see the "Materials" section for Study 1. In the current sample, PES had satisfactory interitem reliability (Cronbach's $\alpha = .80$).

Srole's anomia scale

It has been claimed that Srole's anomia scale (1956; Seeman 1991) is one of the most frequently used psychometric instruments in social sciences (e.g. Caruana et al. 2000). The

Table 3 Correlation matrix for Study 3

Variables	1	2	3	4	5	6
1. Poker experience	1	−.01[n.s.]	−.04[n.s.]	−.1[a]	.02[n.s.]	−.03[n.s.]
2. Social well-being		1	−.48***	−.53***	.23***	.49**
3. Anomia			1	.54***	−.19**	−.18***
4. MOS alienation				1	−.23***	−.16**
5. Self-control					1	.20***
6. Emotional intelligence						1

n.s. = not significant; [a] $p < .1$; ** $p < .01$; *** $p < .001$. MOS = Marginalization of Society

scale measures the individual's experience of being integrated or attached to his or her society and its values—that is, the lack of anomie (the validity of the scale is assessed in Seeman 1991). We employed a six-item version of the scale that was adapted from the annual General Social Survey of the U.S. National Opinion Research Center, which the Srole anomia scale has been part of since 1973. Typically, anomie is negatively correlated with happiness and life satisfaction (e.g. Keyes 1998). A sample item is "You sometimes can't help wondering whether anything is worthwhile anymore." All the items are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .70$). Higher scores indicate higher levels of anomie—that is, the experience of detachment from one's society and its values.

Marginalization of Society (MOS) Alienation Scale

The MOS Alienation Scale is an alternative measure of social alienation developed in response to the criticism received by Srole's anomia scale. According to Travis (1993), Srole's anomia scale is unable to accurately measure alienation in subcultures and small-scale communities. We employed a six-item version of the scale that was adapted from the annual General Social Survey of the U.S. National Opinion Research Center. A sample item is "The people running the country don't really care what happens to you." All the items are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .70$). Higher scores indicate a higher level of alienation from society.

Social Well-Being Scale

This scale was developed by Keyes (1995, 1998; Keyes and Shapiro 2004) and includes 14 items with five subfacets, which were not analyzed separately. Social well-being relates to a person's sense of involvement with other people and with her or his community. Sample items are "People do not care about other people's problems," "Society isn't improving for people like me," and "I believe that people are kind" (reverse coded). The questions are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .73$). Higher scores indicate higher levels of social well-being. All anomie/alienation and well-being scales (Srole's anomia scale, the MOS Alienation Scale, and the Social Well-Being Scale) were included to assess the possible sociological (rather than just psychological) consequences of poker playing.

Emotional Intelligence Scale

This scale was developed by Schutte et al. (1998) and consists of 33 items. The scale has been shown to discriminate accurately between therapists and their clients, with therapists scoring higher on emotional intelligence. In addition, people who score high on the scale tend to display lower levels of pessimism and impulsivity (see Schutte et al. 1998). Sample items are "I am aware of my emotions as I experience them" and "It is difficult for me to understand why people feel the way they do" (reverse coded). All items are anchored from 1 ("Strongly disagree") to 7 ("Strongly agree"). The scale had high interitem reliability (Cronbach's $\alpha = .91$). Higher scores indicate higher levels of emotional intelligence (See the description in Reading the Mind in the Eyes Task in Study 1).

Self-Control Scale

This scale was developed by Tangney et al. (2004) and consists of 36 items. The Self-Control Scale is generally negatively associated with psychological pathologies and social deviance and positively associated with the quality of social and familial ties. In addition, it is positively associated with abilities in perspective taking and negatively associated with a ruminative tendency to "wallow" in various negative aspects of life (Tangney et al. 2004). Finally, high self-control positively predicts proficient anger management and motivation to forgo binge eating and excessive drinking (Tangney et al. 2004). Sample items are "Getting up in the morning is hard for me" and "People would say I have iron self-discipline." All the items are anchored from 1 ("Not at all like me") to 7 ("Very much like me"). The scale had satisfactory interitem reliability (Cronbach's $\alpha = .81$). Higher scores indicate higher levels of self-control.

Results

A bivariate correlation matrix was calculated between all the variables (Table 3). Unsurprisingly, social well-being was negatively correlated with anomie, $r(353) = -0.48$, $p < .001$, and social (MOS) alienation, $r(353) = -0.53$, $p < .001$; and positively correlated with self-control, $r(352) = 0.23$, $p < .001$, and emotional intelligence, $r(353) = 0.49$, $p < .001$. Self-control and emotional intelligence were also positively correlated, $r(353) = 0.2$, $p < .001$. Anomie was positively correlated with social alienation, $r(353) = -0.54$, $p < .001$, and both were negatively correlated with self-control and emotional intelligence, $rs(353) < -0.16$, $ps < .01$. Poker experience was marginally negatively correlated with MOS alienation, $r(353) = -0.1$, $p < .1$: Participants with more poker experience reported—albeit marginally—lower levels of social alienation. No other correlations between PES and other variables were found. These results imply that poker experience is not strongly related to social well-being, alienation, emotional intelligence (or emotional disorders), or impulsivity.

Discussion

The results of Study 3 resonate with those of Study 1: Neither social anomie nor general well-being was associated with players' level of poker experience. That is to say, experience in poker players is not associated with any apparent adverse social consequences resulting from long working hours in social isolation. On the other hand, poker experience does not

correlate positively with either emotional intelligence or self-control, even if anecdotal evidence on professional poker players associates them with these properties. This suggest that insofar as poker is capable of functioning as a learning ground for self-control and emotional maturity in dealing with adversities, its influence may remain in the domain of poker rather than extending to the entire life of the player.

General Discussion

The results from the three studies presented here suggest that extensive experience in poker is not associated with social dysfunctions (Studies 1–3), alienation (Study 3), emotional coldness (Studies 1 and 3), lack of impulse control or self-control (Study 3), or selfish behavior (Study 2). The current results also show that experienced poker players are less sensitive to emotional turmoils associated with losing (Study 1) and less predisposed to self-rumination. These findings are in line with previous reports (Palomäki et al. 2013a, 2013b, 2014). Together, these results further strengthen the interpretation that poker experience is related to a mature emotional disposition towards losing—that is, being able to calmly react to inevitable (and sometimes substantial) monetary losses. It should also be noted that the decreased emotional sensitivity to losses observed in experienced players seems not to be related to a pathological denial of emotions in general (alexithymia): Poker experience was not related to decreased levels of emotional intelligence (Study 3) or empathizing abilities (Study 1).

Furthermore, the results allude (albeit weakly) to a negative association between poker experience and social alienation, suggesting that dedicating time and effort to increasing one's poker skills might be reflected in modest increases in social well-being (Study 3). It is typical for active poker players to participate in online poker communities (subcultures), which are numerous and popular and function as a social outlet for many poker enthusiasts to talk about all things concerning poker and many other topics as well (see e.g. O'Leary and Carroll 2012). It is not obvious that physical copresence should have privilege over virtual: These stimulating social subcultures might explain why experienced poker players—despite often playing for long hours in apparent social isolation—show no signs of decreased social well-being. This interpretation might be sensible, given that most participants in Study 3 were recruited through active online poker forums. Nevertheless, further evidence is required to better evaluate these notions.

Experienced poker players scored higher on both PGSI and SOGS than inexperienced ones, but they seem to be no less well-adjusted with respect to their overall well-being. This positive association between poker experience and problem gambling appears to be contradictory, and needs to be interpreted with caution. A reasonable explanation for this contradiction relates to the role of skill in poker. The majority of gambling games are primarily based on chance rather than skill. In these games, it is impossible for players to increase their skill to the point of being able to win money by playing in the long run. However, in games of skill, such as poker, experience in playing often indicates dedication and determination whereby one's skills can be increased—and the best way to acquire experience is by playing. Increased skills, in turn, enable experienced players to play profitably for increasingly longer hours. Yet in doing so, these players come to meet several criteria that would identify them as problem gamblers.

It might be valid to employ the traditional problem-gambling measures in assessing any gambling population associated with playing games of pure chance. In these games, playing excessively for long hours will inevitably result in monetary losses and, ostensibly, decreased levels of social well-being and general satisfaction in life. However, in the domain of poker, a game of skill and chance, employing problem-gambling measures might distort the results obtained and render the subsequent conclusions suspect. For example, in Study 1, PGSI scores were strongly positively correlated with self-rumination and negatively correlated with socioemotional well-being, experiences of hope, ability to empathize, level of education, and general satisfaction in life. These results are what should be expected from a scale measuring problematic aspects of gambling behavior. Thus, it appears that in the sample of Study 1, PGSI was a functional scale in predicting decreased emotional well-being and poor adjustment to social surroundings. Only when players' level of poker experience (and by extension, their level of poker skill; e.g. Palomäki et al. 2013b) is examined is a contradiction observed. This suggests that when the level of poker experience is considered, PGSI might no longer be a valid measure of truly problematic aspects of gambling behavior.

Similar, seemingly contradictory findings have been previously reported. For example, Griffiths et al. (2010) found that in a sample of online poker players, the overall length of time (in months) as a poker player predicted a player's financial success in the game, number of days played per year, and duration of individual poker-playing sessions. Furthermore, the number of days played and the duration of poker sessions predicted problematic gambling behavior (*DSM-IV* criteria), whereas the overall length of time as a poker player did not. This finding was interpreted by the authors as representing a "new breed of problem gamblers" who, by playing poker, do not lose money but instead lose time.

In light of the current results, we propose an alternative interpretation. In the current studies, experienced poker players in particular might also appear to be losing time by playing for long hours and many months. However, "losing time" is a loaded term, insofar as it presupposes that time spent gambling is lost in a negative sense and represents to some extent a decrease in well-being—via, for example, apparent social isolation. In other words, it is not clear when losing time becomes a detrimental consequence of a specific behavior. Is time lost in playing video games, hiking, fishing, gardening, or collecting stamps? Indeed, the concept of losing time depends entirely on what is valued. Poker players are no more losing time than are athletes who focus on their training to become better. In general, time can be lost only in comparison to some better use, which in turn is dependent primarily on subjective preferences. It is conceivable that the positive association between duration of poker sessions, number of days played per year, and problem gambling behavior reported by Griffiths et al. (2010) is akin to the positive correlation observed between poker experience and both PGSI and SOGS in the current studies. If this is the case, then using the term "new breed of problem gamblers" to describe experienced poker players might not be well-founded.

Limitations and Conclusions

In addition to the standard methodological limitations related to survey (correlative) research, the current studies face the following limitations. Participation was voluntary, and the survey of Study 1 in particular took a relatively long time (40 min on average) to complete. Thus, a selection effect for certain types of participants (e.g. nonsuspicious and patient ones) might have been introduced. The samples also consisted of people with at least

some level of poker experience. Comparisons between non-poker-playing and poker-playing populations could not be made. Thus, we did not ascertain whether a difference in general well-being between these two populations exists; this comparison is instead suggested for further research.

The traditional methods of scoring in PGSI and SOGS result in assigning participants to categories such as (in ascending score order) "non-problem gambler," "low level of problems," "moderate level of problems," and "problem gambler." In the current studies, the traditional method of scoring was not employed due to its lower resulting statistical resolution (amount of variance). That is, by employing the scales as continuous Likert scales, more statistical power was guaranteed. However, we were also unable to provide an unambiguous index of the total percentage of problem gamblers in our current samples. Any PGSI or SOGS problem-gambling index or categorization calculated from the current samples would not be analogous to one obtained by employing the traditional method of scoring and participant categorization. Thus, the use of the modified (Likert) versions of PGSI and SOGS might result in some ambiguity if the current results are contrasted with results obtained from previous studies. However, this is not likely to be the case, given the apparent conventional construct validity of these measures in our samples.

In the current studies, PGSI and SOGS appeared to be valid measures for predicting detrimental emotion regulation, problems in social adjustment, and decreased general well-being. However, we argue that these scales do not adequately take into consideration in their items the possibility that games of skill, such as poker, might entail behavioral dynamics dissimilar to those observed in games of chance. The current results suggest that players' level of poker experience is not related to social maladjustment or decreased well-being. In fact, the evidence alludes to the contrary: Poker experience is weakly related to higher levels of social well-being and to mature emotion regulation abilities. These findings might pose a future challenge to the existing and clinically motivated instruments that aim to measure problematic aspects of skill-based gambling.

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